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CRITICAL REMARKS ON PHILIPPINE LANDSHELLS
WITH DESCRIPTIONS OF NEW FORMS.

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The present paper embraces descriptions of new forms of Philippine Island landshells and a discussion of involved nomenclatorial problems concerning some of the names bestowed upon species long ago. The facts presented were brought out in the examination of material sent to the United States National Museum for determination, chiefly by Mr. Walter F. Webb, of Rochester, N. Y., whose indefatigable efforts in the Philippine field are rapidly increasing our knowledge of the mollusk fauna of that region. Other forms were transmitted by Mr. Gilbert S. Perez, Industrial Supervisor, at Lucena, in Tayabas, Luzon, while still others are the product of the late Colonel Edgar A. Mearns' collecting in the Philippine Islands, and one new form was the gift of Mr. Wm. H. Weeks, of Brooklyn, N. Y.

The types of all the new material are in the United States National Museum, as well as additional representative specimens. These were donated by the gentlemen above mentioned.

Hemiglypta webbi, new species.

Shell dark horn colored, broadly conic, very thin, with strongly carinated periphery. Upper surface of the whorls moderately rounded. The first half turn marked by strong wavy axial wrinkles, which is succeeded by a half turn that is finely wrinkled; from there on, the axial sculpture consists of fine retractively slanting, wavy threads, which are separated by spaces about as wide as the threads. The spiral sculpture consists of fine incised lines which break the axial threads into a series of slender elongated tubercles having their long axis parallel with the axial threads.

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Suture feebly impressed. Periphery of the last whorl strongly carinated. Base evenly, gently rounded with a decided umbilical depression and a slender perforation which is about one-third as wide as the umbilical callus. Aperture oval, decidedly angulated at the periphery; lip but slightly thickened; columella strongly reflected at its insertion where it forms a narrow callus; parietal wall glazed with a thin callus.

The type and two specimens of this species, Cat. No. 219,038, U. S. N. M., donated by Mr. Webb, come from La Union, Davao, Mindanao. The type has 5.9 whorls and measures: altitude, 21.2 mm.; greater diameter, 35.9 mm.; lesser diameter, 31.6 mm. Another specimen, Cat. No. 256,242, U. S. N. M., was collected by Dr. E. A. Mearns at Sulug on the east shore of the Gulf of Davao, Mindanao.

***Trochomorpha repanda pagbilaoensis*, new subspecies.**

Shell resembling *Trochomorpha repanda repanda* Möllendorff in coloration but less shiny and decidedly smaller and a trifle more elevated. The upper surface of the whorls is marked by closely and regularly spaced, finely incised, wavy spiral lines in the present subspecies, while in *Trochomorpha repanda repanda* Möllendorff, the incised spiral markings are confined to the upper surface of the early whorls and they are extremely feeble. The under surface of the present subspecies is marked by numerous well incised spiral lines which are much stronger than those that mark the under surface of *Trochomorpha repanda repanda* Möllendorff. In the strength of the spiral markings of the under surface, the present subspecies appears to stand about half way between *Trochomorpha repanda repanda* Möllendorff and *Trochomorpha repanda candida* Möllendorff.

The type and another specimen of the present form, Cat. No. 310,053, U. S. N. M., were collected by Mr. Gilbert Perez, on the Greater Pagbilao Island, off the west coast of Tayabas, Central Luzon. The type has 5.5 whorls and measures: altitude, 4.5 mm.; greater diameter, 12.5 mm.; lesser diameter, 10.8 mm. *Trochomorpha repanda repanda* Möllendorff was described from Montalban, Luzon, while *Trochomorpha repanda candida* comes from Marinduque Island.

***Cochlostyla fulgetrum tayasana*, new subspecies.**

In 1840 Broderip defined *Bulinus fulgetrum* on page 119 of the Proceedings of the Zoological Society of London. Here he describes varieties a to k. Of these varieties, a, b, e, f and h are listed from the Island of Negros, c, d and g from the Island of Guimaras and i and k from the Island of Panay. *Cochlostyla fulgetrum fulgetrum* in the restricted sense has been fixed upon the shells of Negros and other designations have been applied to those from Guimaras and Panay.

The Isaac Lea collection in the U. S. National Museum contains four specimens, two adult and two immature, which are cotypes gathered by Cuming on the Island of Negros. These agree perfectly in outline and coloration with the specimens from Cabancalan on the west side of the north coast and others from Escalante on the east side of the north coast

of Negros. We may therefore assume the north shore of Negros to be the home of *Cochlostyla fulgetrum fulgetrum* Broderip.

The present sending from Tayasan, which lies on the middle of the east coast of Negros, presents shells which are much more slender, therefore taller than the typical *Cochlostyla fulgetrum fulgetrum*. The ground color, also, is olive green, while in *Cochlostyla fulgetrum fulgetrum* it tends to yellow. Occasional specimens of both races have a pale reddish brown ground color. A brown peripheral band may be present or absent in both. It is not surprising that the specimens of the north and east coast should be different for the two regions are separated by high mountains. It is without hesitancy, therefore, that the name *Cochlostyla fulgetrum tayasana* is now applied to the race from Tayasan, which will probably be found to extend over the eastern portion of Negros Oriental. The type and four specimens form Cat. No. 219,037, U. S. N. M., and were donated by Mr. Webb.

Cochlostyla nimbose antiqua, new subspecies.

Broderip, in describing *Bulinus nimbosus* in the Proceedings of the Zoological Society of London, 1840, page 121, defines four varieties. Varieties a, b and c have the ground color brown, and come from the Island of Negros. The variety d, on the other hand, has a pale yellow ground color and comes from the Island of Panay. In spite of the fact that so many names have been bestowed upon Philippine *Cochlostylas*, no one appears to have separated these two races, which are quite distinct. Since Reeve has figured the dark colored form from the Island of Negros under the name of *Bulinus nimbosus*, Conchologia Iconica, plate 4, figure 17, we may consider the name restricted to this form, and I now give the name *Cochlostyla nimbose antiqua* to the race from the Island of Panay. The type and two specimens received from Mr. Webb are entered: Cat. No. 310,072, U. S. N. M.

The group of *Cochlostyla sarcinosa* is sadly in need of revision. The name is usually credited to Ferussac, but there while Ferussac used the name *sarcinosa* in 1822 in his "Tableaux systematiques des Animaux Mollusques," on page 47, number 323, the name as here applied has no status for it is a *nomen nudum*. In literature one frequently finds the name given as dating from Ferussac-Deshayes "Histoire Naturelle Générale et Particulière des Mollusques Terrestres et Fluviales" on page 267 and figured on plate 169, figures 1 and 7, but unfortunately the plates did not bear any name when they were issued, and the text for the part embracing this species was not published until 1850. In the mean time (1840), Broderip in the Proceedings of the Zoological Society of London, pages 121-123, reported on Cuming's collection from the Philippines, *Helix (Cochlostyla) sarcinosa* with varieties a-g. Of these varieties, a and b are from the Island of Negros, c is from an unknown source, d is from the Island of Guimaras, e and f are from the Island of Masbate, and g is from an unknown locality. Subsequent authors have looked upon the globular shells from Masbate as the typical form and we may therefore restrict the name *Cochlostyla*

sarcinosa to the subspecies occurring upon that island, which will have to bear the name *Cochlostyla sarcinosa sarcinosa* Broderip.

In 1850, Deshayes in Ferussac's "Histoire Naturelle Générale et Particulière des Mollusques Terrestres et Fluviales," on page 316, bestowed the name *Helix turgens* upon a shell which is depicted on plate 108, figures 11 and 13. The locality cited in this case is "Philippine Islands." The figures, however, quite clearly show that this name should be attached to the shells from Guimaras Island and we may therefore restrict it to the members of that island, which should be called *Cochlostyla sarcinosa turgens* Deshayes.

The third of the *sarcinosa* group to receive a name were the shells from the northwestern portion of Negros, which were christened *Cochlostyla sarcinosa dictyonina* by von Möllendorff in the *Abhandlungen der Naturforschenden Gesellschaft zu Görlitz* in 1898, volume 22, page 135.

There are two additional races in the complex before us, which will require a name. The first of these comes from the south central coast of Negros and may be known as *Cochlostyla sarcinosa negrosa* new subspecies, while the second one comes from northwestern Panay, and may be known as *Cochlostyla sarcinosa pandana*.

Of these five races, four have a broad peripheral band which extends to the lip on the last whorl. Of these, *Cochlostyla sarcinosa sarcinosa* is the largest. It is a subglobular form with olive green ground color, and only weakly fenestrated with spiral and axial markings. It has a whitish zone of about the same width as the brown band immediately below the latter.

The new subspecies, *Cochlostyla sarcinosa negrosa*, approaches typical *Cochlostyla sarcinosa* in shape and ground coloration. It is, however, much more strongly marked by hydrophanous axial and spiral bands of white which gives to this race the fenestrated appearance characteristic of *Cochlostyla sarcinosa turgens*. The type of this race is Cat. No. 219,035, U. S. N. M. and comes from Tayasan, Negros.

The other two races are less broadly conic. *Cochlostyla sarcinosa turgens* from Panay is the most strongly fenestrated form. It is marked by spiral and axial bands of pale brown placed upon a pale olive ground color. These markings are particularly well developed on the base. *Cochlostyla sarcinosa dictyonina* Möllendorff is the darkest of all, resembling *C. sarcinosa turgens* in general color pattern, but having all the markings much intensified.

The fifth race, the one now christened *Cochlostyla sarcinosa pandana*, lacks the brown peripheral band on the last turn, although this is present in the suture on the early whorls. The type of this, Cat. No. 310,071, U. S. N. M., comes from Pandan, northwest Panay.

***Leptopoma goniostoma cotabatensis*, new subspecies.**

Shell similar to *Leptopoma goniostoma* Sowerby having, however, the shoulders of the whorls more flattened and the peripheral keel less produced and the umbilicus more open. The aperture, too, is smaller and

more nearly circular. The present subspecies appears to occupy the lower Rio Grande Valley of Cotabato, Mindanao.

The type, Cat. No. 250,787, U. S. N. M., and a large series of additional specimens were collected by Dr. E. A. Mearns near the town of Cotabato.

Leptopoma goniostoma goniostoma comes from Misamis Province, on the north coast of Mindanao.

***Leptopoma nitidum weeksi*, new subspecies.**

In September, 1918, I published in the Journal of the Washington Academy of Sciences a key to the subspecies of *Leptopoma nitidum* Sowerby of the Philippine Islands. The present subspecies is nearest related to the subspecies which I there called *Leptopoma nitidum anaitis* Bartsch. This differs from it in being more broadly conic and larger, likewise in having the spiral striations of the upper surface and the base more numerous and a little more closely crowded. Thirty-six specimens give the following average measurements altitude, 14.2 mm.; greater diameter, 13.9 mm., lesser diameter, 10.5 mm.

The type, Cat. No. 310,073, U. S. N. M., which comes from the Island of Bohol, measures: altitude, 14.1 mm.; greater diameter, 13.9 mm.; lesser diameter, 10.7 mm.